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Plotting space twenty feet square to give each of sixteen children an equal share. Keeping account of money expended for cocoa, milk, and desk supplies from allowance of 25 cents per week. Measurement of rooms of toy-house for accommodation of furniture. Measurements needed in making furniture of wood from rough stock. Measurements for toy-wagon reduced from real wagon, feet reduced to half-inches.

Recipes for cooking enlarged from quantities sufficient for one person to that needed for two, for four, or for sixteen. This brings into use relation of gills, pints, and quarts, ounces and pounds.

Cooking.—Food prepared over gas stoves and baked in oven built out-of-doors last November. Baking of potatoes, eggs, and apples. Making custard and cornstarch pudding. Preparation of lemonade and whipped cream. Starch made from potato, and used in starching doll clothes.

Clay-modeling.— Dishes for use in doll's house and larger dishes for use in outdoor luncheons.

THIRD GRADE.

GUDRUN THORNE-THOMSEN.

WITH the first signs of spring, when things are happening out-of-doors, the children demand a life away from the schoolroom; they demand work very different from that of the winter months. Ideally, the school should then be only a convenient place in which to discuss the experiences of the outdoor life. As far as possible, the children will go on excursions every week during May and June, to the farm, woods, swamp, and prairies in the neighborhood. The school garden will afford an excellent opportunity for a great deal of healthful work. The school garden is 160 feet long and 40 feet wide. Each grade will have alloted to it a piece of ground with full responsibility for its planting, sowing, weeding, and harvesting. Although the actual work in the garden will not begin until May, the children must make their plans beforehand and find out what they need to know in order to conduct the work successfully.

A log-house, sheds, and stables made of wood, and the farm animals made of clay, have been finished during the winter quarter. The third grade will have 724 square feet of the school garden at its disposal, and this ground will be turned into a miniature farm. The plan, measurements of the fields to a scale, fences, roads, etc., will be made by the children to suit their fancies. Flowers will be planted around the farmhouse; the kitchen garden will, of course, be found in the rear. Wheat, corn, oats, and timothy will probably be sown in the fields; potatoes, turnips, peas, beans, and lettuce in the kitchen garden; while salvia, cornflowers, phlox, and sweet alyssum will blossom in the farm garden.

Before the actual farm work begins, the children will make drawings to show the general plan of the farm, with its fields and gardens. When they have decided which flowers and grains to plant, they must find out about the habits and demands of those plants, the condition of the soil, how to prepare it for the proper growth of the seed or plant, how deep to plant, etc.

The means of getting this knowledge will be: (1) to write for information to the children at Kansas, Ill., who live on farms where wheat, corn, potatoes, and other plants are grown; (2) to visit a farm while planting is in process; (3) to read.

When germination takes place out-of-doors, the children will make a careful study of the plant and animal life on a prairie area selected for the purpose. Each child will make a calendar on a large piece of white bristol board, to keep a record of what goes on in his plot. He will also note in his record the appearance of trees, the returning birds, insect life—in short, any sign of the reawakening of spring. The daily weather observations, particularly of the temperature and rainfall, will now be used to build up the picture of cause and effect, the increase of heat explaining the changes taking place. For suggestions on work in germination and the preparation of boxes in which to plant the seeds, see Jackman's *Nature Study*, pp. 312–15.

Several experiments may be performed to show how water is absorbed by a plant. For instance:

1. Allow a small plant to grow in a bottle of colored water. (The water may be colored with eosin.) In a short time the red color will be spread all over the stem and leaves of the plant.

2. How much moisture does a plant use in a certain length of time? Let a sturdy plant grow in a bottle filled with good soil, moistened. Cork the bottle tightly, allowing the plant to come through a small hole in the cork. The space around the stem must be sealed up. Weigh the whole thing. After a number of days, weigh again.

In order to understand the value of soils in relation to plant life, it will be necessary to perform experiments which will show some of the physical properties of soils. The following directions are taken from Jackman's *Nature Study*, p. 436:

"1. To find the rate at which soils allow water to pass through them, take several glass tubes, about half an inch in diameter and a foot long, and tie over one end a piece of linen. Fill each one with a different specimen of soil which has been finely powdered and well dried. Set the tubes upright in a vessel having about an inch of water in it, and note the rate at which the water rises in the different tubes. Keep the water at a constant level in the pan by occasional additions.

"2. To illustrate the different capacities for water: Fold two filters and place them loosely, one inside the other, in a funnel. Carefully dry and place on a filter an ounce of finely powdered soil. Add to this cold water by drops until it begins to trickle down the funnel tube. Continue to add until sure that the soil is perfectly saturated, and then remove the filters to a piece of blotting paper or a cloth which will absorb the moisture from them. Then place the under filter in one scale pan, and the other one, with the soil upon it, upon the other, and balance with weights. How much heavier is it now than the dry soil? What part of it is water?"

As soon as the first spring flowers appear, an excursion will be taken to the woods. Points for study: (1) Location of first flowers found. (2) Do they grow singly or in mass? (3) What makes them appear so early?

A sugar maple will have been selected previous to the excursion, and one tapping will have taken place in March. On the excursion the tree will be tapped again. The flowing of the sap will help the children to realize the work of the tree at this time. Boiling the sap to syrup and sugar will follow this observation.

Study of returning birds: Continual visits to the parks; birds observed on excursions; the interrelation of bird, insect, and plant life; the structure of birds — bill, feet, wings, shape of body — as adapted to particular functions. (Specimens in museum used.) Painting, drawing, and modeling are the chief aids to observation in this study. The children will have an opportunity to verify their observations and to find out what they have no means to observe by using the books in the library bearing on the above subjects.

Gardening. — The gardening will take the place of the regular cooking lessons, which will be discontinued during the spring quarter. With the exception of the plowing, which the children will watch, all the rest of the gardening will be done by them. Raking, sowing, and planting, watering when necessary, weeding, freeing the plants from injurious animal life, comprise this work.

History.— The children have completed the farm buildings and stocked the farm. When the products are raised, a market must be found. The first grade will by this time have finished its houses, which will be made into a village and placed at some distance from the farm. The farmers fill their wagons (made in the manual training) with their farm products, radishes and lettuce, and drive to a station, where these products are loaded on a train (made by the fourth-grade children), which runs to the village. The beginning of a town will be the subject of study; where situated, stores, grain elevators, railroads, etc. Means of study: visits to South Water street to see truck farmers' products, the commission-house men buying, etc.; maps of the United States for the location of town and cities. Why is Chicago where it is?

Mathematics.— The garden work demands a great deal of work in measuring distances, and ideas of area, dry measure, and values. The history work necessitates a close study of interchange of commodities. It will be necessary to ascertain the prices of farm products, cost of transportation, market value, value of labor, etc.

Literature.— Spring poems to be committed to memory. A spring festival will be held, the third grade taking part in the dramatization of the story of the "Sleeping Beauty." The story will be told to the children, they working it into a play.

FOURTH GRADE.

ROSE PHILLIPS.

History.—The work of the winter quarter has been the history of the making of the city of Chicago. In tracing the growth of the city, it was necessary to emphasize its location in relation to the surrounding country. The development of transportation and means of communication has formed an important feature of the work.

In the spring we shall consider some of the modes of public service—those functions of government by which the comfort of the people in a great city is secured. Among these are supplying water, making and illuminating streets, and building bridges.

1. Water supply: Source; means by which it is brought into our houses; relation to health of people; primitive methods of obtaining water; story of the construction of the first crib and tunnel; visit pumping station and crib.

REFERENCES: Kirkland, *History of Chicago;* Andreas, *History of Chicago;* Cleaver, *Reminiscences of Early Chicago,* p. 47; *Journal of Western Society of Engineers,* February, 1901; *Water System of Chicago* (published by J. M. Wing & Co., 1874); Mason, *Water Supply;* Hasen, *The Filtration of Public Water Supplies.*

2. Streets: Plan of city; width of streets; kinds of paving; history of street-paving; street-cleaning; stories of noted roads, as those of the Romans; visit Field Columbian Museum.

REFERENCES: Andreas, *History of Chicago,* p. 56; Bross, *History of Chicago,* pp. 48, 118, 119; Cleaver, *Reminiscences of Early Chicago,* p. 29 ("Fergus Papers"); *Shop Talk of the Wonders of the Crafts,* Second Series, pp. 176, 203, 229; Currier, *Practical Hygiene,* p. 155; Waring, "Street Cleaning in New York and Abroad," *Municipal Affairs,* Supplement, June, 1899; Campbell, "Road Contsruction and System of Control," *Sanitarium,* April, 1901; Shaw, "George Edward Waring," *Review of Reviews,* Vol. XVIII.

3. Illumination: Present methods; advantages of each and cost of each; history of methods of lighting; the lamplighter.

REFERENCES: Knight, *American Mechanical Dictionary; Municipal Engineering;* Earle, *Home Life in Colonial Days,* p. 32; *The Evolution of Artificial Light* (published by the Union Pacific Railroad, 1893—Chicago Public Library); *Municipal Affairs.*

4. Bridges: Present appearance; artistic and inartistic examples; history of the old ferries and of the methods of bridge construction; difficulty of reconciling the commerce of the river with the traffic of the city.

REFERENCES: Andreas, *History of Chicago;* Kirkland, *History of Chicago,* p. 24; Heck, *Iconographic Encyclopædia,* "Bridges;" Knight, *Mechanical Dictionary,* "Bridges;" *Universal Cyclopædia,* "Bridges;" Moffett, "The Bridge Builder" (careers